

Application No.:

94 910 858.3

Patent No.:

EP 0688189 B

Minutes of the oral proceedings before the OPPOSITION DIVISION

The proceedings were public.

Proceedings opened on 12.12.2002 at 09:10 hours

Present as members of the opposition division:

Chairman: GEORGIU Z
1st member: MERTE B E A
2nd member: ARJONA LOPEZ G

Minute writer: ARJONA LOPEZ G

Present as or for the party or parties:

- For the Proprietor(s): WAKE FOREST UNIVERSITY

Thomas Weber as representative and Dennis Noll, Will Quirk and Nadeem Bridi as technical specialists

- For the Opponent 1: Mondomed N.V.

Marion Müller-Gerbes and Matthias Wagner as representatives

The identity of the person/s (as well as, if applicable, that of the witness or witnesses) and, where necessary, the authorisation to represent/authority to act were checked.

Essentials of the discussion and possible relevant statements of the parties:

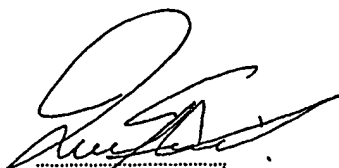
After deliberation of the opposition division,

- the chairman announced the following decision:

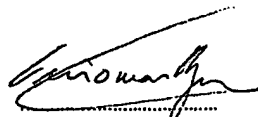
"Account being taken of the amendments made by the patent proprietor during the opposition proceedings, the patent and the invention to which it relates are found to meet the requirements of the European Patent Convention. The currently valid documents are those according to the main request."

The party/parties was/were informed that the minutes of the oral proceedings and a written reasoned decision (including an indication of the possibility of appeal) will be notified to him/them as soon as possible.

The chairman closed the oral proceedings on 12.12.2002 at 14:50 hours.



GEORGIOU Z
Chairman



ARJONA LOPEZ G
Minute writer

Annex(es):
first and second auxiliary requests; copy of figure 2 of D5
Opponent authorisation; claim 1
Form 2339.4



1. The Chairman opened the proceedings and asked the parties to confirm their requests.
2. According to rule 101(8) EPC the European Patent Attorney Mr. Matthias Wagner was appointed as additional representative for the Opponent and a corresponding authorisation was filed (attached).
- 3 The Opponent confirmed his request for revocation of the patent in its entirety and the Patentee confirmed his main request for maintenance of the patent in unamended form and his three auxiliary requests filed with letter of 11th November 2002.
4. The issue of Novelty with respect to the subject-matter of claim 1 of the main request was discussed.
5. The Opponent referred to document WO-A-93/09727 (D9) and cited page 10, line 20 ff., page 17, line 31-page 18, line 3, page 16, line 27 ff., page 8, line 32 ff. and examples 1 and 6 of said document. Besides, the opponent referred to following passages of the opposed patent: page 7, §3, lines 21-26, page 3, §8, page 5, §21, page 13, §68, lines 54-56 and example 6. The opponent compared, in particular, examples 1 and 6 of document D9 with example 6 of the opposed patent.
6. The chairman asked the Patentee if the embodiments described by figures 1-3 and 10-11, fall under the scope of claim 1. The Patentee answered that those embodiments do not disclose the subject-matter of claim 1.
7. After an interruption for deliberation the Chairman announced that the subject-matter of claim 1 was not regarded as being new with respect to the disclosure of document D9.
8. The Patentee asked for a break for amending claim 1 of the opposed patent with respect to document D9, which was granted to him for 30 minutes. He then submitted new first and second auxiliary requests that replaced the three auxiliary requests filed with letter of 11th November 2002.
9. The Opponent mentioned that for formal reasons, the filter of claim 1 not being explicitly mentioned in document D9, the novelty of claim 1 of the auxiliary request with respect to D9 was not objected. However, he expressed the comment that pumps like the one of D9 usually have filters.
10. The Chairman asked the Opponent if an objection under article 123(2) EPC was to be made with respect to the first auxiliary request whereupon he answered that he did not wish to make any objection to that respect.
11. Further, the Chairman asked if novelty was objected and the Opponent confirmed



it was not and that the question of inventive step would be addressed.

12. The Opponent cited document US-A-22 80 915 (D5) as being the closest prior art and referred especially to following passages: page 1, left column, lines 1-15, page 1, right column, lines 12-14 and lines 30-34, page 2, left column, line 38 ff. and lines 54-66 and figure 3. Besides, he mentioned that to use a vacuum pump was a matter of common knowledge and referred to document US-A-49 69 880 (D1), column 4, lines 41-49. Therefore, according to the Opponent, the subject-matter of claim 1 essentially differs from the disclosure of document D5 in that the appliance further comprises a filter for preventing the pump from venting micro-organisms aspirated from the wound. The latter feature being a matter of normal design and therefore not inventive.
13. The Patentee argued that the appliance of document D5 fails to achieve the especial effects of the invention, i.e. the wound borders being pulled against each other by the tension of the flexible cover when a reduced pressure is applied. He defined the problem to be solved by the invention as to provide an appliance to promote wound healing by promoting the formation of granulate tissue and additionally to promote wound healing by pulling the borders of the wound against each other. He further mentioned that the appliance of claim 1 could easily be adapted to any body shapes, while the appliance of document D5 could not. Example 1, page 2, line 13 ff. and page 8, line 32 ff. of the opposed patent was cited. Furthermore, using a copy of figure 2 (see Annex) of document D5, the Patentee explained, that that device was intended for irrigation of the wound either by sucking the irrigation fluid or by pressing it through the system, but not for maintaining reduced pressure over the wound. He argued that, taking in consideration the above problem, the person skilled in the art would not regard document D5 as being the closest prior art document. Besides, a combination of the teachings of documents D1 and D5 would not give any motivation to the person skilled in the art to solve the above problem.
14. The Chairman asked the Patentee to reformulate his argumentation using the objective problem if D5 were to be considered as the closest prior art document.
15. The Patentee argued that the cover of the appliance disclosed in document D5 is not sheet-like, that said appliance is not suitable for maintaining a vacuum and that no filter is disclosed therein.
16. The Chairman asked the Patentee if he was of the opinion that document D5 also disclosed a vacuum pump. The Patentee argued that the device of document D5



is not suitable for maintaining a reduced pressure even if connected to a vacuum pump.

17. The Opponent argued that the feature of the flexible cover producing a tension relates to a method of treatment of the human body by therapy in the meaning of Article 52(4) EPC.
18. The Patentee further cited page 1, left column, lines 12-15, page 2, left column, lines 54-65, page 2. The Opponent further referred to page 1, right column, line 36 ff. and line 52 ff. and page 2, left column, line 31 ff.
19. After a break for deliberation the Chairman announced that the subject-matter of claim 1 is not inventive with respect to document D5 in combination with general knowledge, the only difference between the appliance of document D5 and the subject-matter of claim 1 being the filter defined in claim 1.
20. The second auxiliary request was further considered, wherein the feature of the cover comprising a flexible sheet was introduced with respect to the first auxiliary request. The Patentee argued that this new feature is not disclosed in document D5.
21. The Chairman asked the Opponent if he had any objections under Article 123(3) EPC, whereupon the Opponent answered that his objections under Article 123(3) EPC with respect to this feature filed in writing with letter of 12.11.02 (cf. point IV, a) no longer applied. On the issue of inventive step, the Opponent cited following passages of document D5: page 1, left column line 35 ff., page 1, right column, lines 12-21 and lines 34-36 and figure 1 and argued that the cover disclosed in document D5 does comprise, at least partly, a flexible sheet.
22. The Patentee amended the second auxiliary request, whereby the cover is defined then as being a flexible sheet.
23. The Opponent argued that one further difference of the amended second auxiliary request with respect to the disclosure of D5 is the cover being a flexible sheet. Nevertheless, the latter feature is obvious from document D1, see column 2, lines 13-15.
24. The Patentee argued that the effect of the cover being a flexible sheet is to provoke a tension to pull the borders of the wound against each other, document D5 being silent about this technical effect. Therefore, the person skilled in the art has no motivation departing from D5 to introduce the latter feature.
25. The Opponent argued that the latter effect is not provided by the features of claim 1 and referred to figures 4 and 6 of the opposed patent. Besides, the objective



problem to be solved by this feature is to reduce costs and to avoid a fixed position of the cup portion. The feature of the cover being a flexible sheet being disclosed in D1. The Opponent further mentioned figures 5 and 6 of the opposed patent.

26. The Patentee after having been given the floor, argued on a different problem-solution approach than that of the opponent.
27. The Chairman reminded the Patentee that if there is at least one way of applying the problem solution approach, this is enough to destroy the inventive step of the subject-matter of claim 1.
28. The Patentee argued that, since document D1 does not refer to appliances to apply reduced pressure to a wound, the person skilled in the art would not take into consideration a combination of documents D5 and D1.
29. After a break for deliberation, the Chairman announced that the subject-matter of claim 1 of the second auxiliary request is regarded inventive. Nevertheless a proper two-part form and an amended description should be filed.
30. The Patentee requested the Opposition Division to perform those amendments. The Chairman explained exclusively and exactly the amendments that the Opposition Division intends to perform and read them aloud (see annexed claim 1). With regard to the description, document US-A-2 280 915 was acknowledged on line 7 of page 3 of the published patent and, further, a statement about figures 1-3 and 10-11 not falling under the scope of claim 1 was introduced on line 15 of page 4. The Opponent did not oppose to these amendments.
31. The Patentee requested the second auxiliary request to become his main request, i.e. that the patent is maintained in amended form on the basis of this request and withdrew all his higher-ranked requests.



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Référence du (des) mandataire(s)
(max. 15 Positionen / max. 15 spaces / 15 caractères au maximum)

E 01 058

Nr. der Anmeldung (des Patents) / Application/Patent No. /
N° de la demande (du brevet)

EP 0 688 189 B1

Ich (Wir) / I (We) / Je (Nous)²

Mondomed N.V.
Middenweg 12
B-3930 Hamont-Achel
(BE)

bevollmächtigte(n) hiermit / do hereby authorise / autorise (autorisons) par la présente³

1) Müller-Gerbes, Margot

2) Wagner, Matthias

Friedrich-Breuer-Straße 112, D-53225 Bonn (DE)

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EP 0 688 189 B1

"Wound treatment employing reduced pressure"

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Ort/Place/Lieu: Hamont-Achel

Datum/Date: 26/12/02

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~~(0073) The terms and expressions which have been employed are used as terms of description and not of limitation and there is no intention in the use of such terms and expressions of excluding any equivalents of the features shown and described, or portions thereof, but it is recognized that various modifications are possible within the scope of the claimed invention.~~

17. December 2002

Claims *First Auxiliary Request*

1. An appliance (29c) for administering a reduced pressure treatment to a wound comprising:

- (a) an impermeable cover (117) for covering and enclosing the wound (114) and for maintaining reduced pressure at the site of the wound;
- (b) a seal (119) operably connected with the cover (117) for sealing said cover to tissue surrounding the wound;
- (c) rigid support means (118); and
- (d) reduced pressure supply means (112) operably connected with the cover for connection to a source of suction for supplying and maintaining said reduced pressure beneath the cover, characterised in that said cover (117) is sheet-like and in that said rigid support means (118) is associated with and separate from said cover (117) for holding the cover out of contact with the wound. *and [] and < >*

2. An appliance according to claim 1, characterised in that it further comprises a screen (100) for preventing overgrowth of wound tissue, said screen (100) being positioned between said wound (114) and said cover (117).

3. An appliance according to claim 2, characterised in that said screen (100) comprises a porous sheet.

4. An appliance according to claim 1, characterised in that said reduced pressure is from about 6.77 kPa (2 inch Hg) below atmospheric pressure to about 23.70 kPa (7 inch Hg) below atmospheric pressure.

5. An appliance according to any of claims 1 to 4, characterised in that said seal (119) includes an adhesive material on the cover for securing said cover to the tissue surrounding the wound.

6. An appliance according to claim 1, characterised in that said cover comprises a flexible sheet (128).

7. An appliance according to claim 6, characterised in that the support means (138) connects with said sheet (128) for supporting said sheet outward from the wound.

8. An appliance according to claim 7, characterised in that said support means comprises a support member (138) located between said sheet and the wound.

9. An appliance according to claim 8, characterised in that said support member includes a porous cup member (138) having a connection port (134) for connecting with said reduced pressure supply means (132).

10. An appliance according to claim 8, characterised in that it further comprises a pad (120) between the wound (124) and said support member (138) for alleviating discomfort caused in the wound by said support member.

11. An appliance according to claim 7, characterised in that said support means comprises a support member (151) extending outwardly over the wound (144) and external to said sheet (148).

12. An appliance according to claim 11, characterised in that said support means comprises attachment means for attaching said sheet to said support means, said attachment means having a connecting member (153) for connecting with said reduced pressure supply means for providing said reduced pressure beneath said sheet, and said support member (151) comprising a plurality of leg members (158) attached to said attachment means for holding said attachment means and said sheet outward from the wound.

13. An appliance according to claim 2, characterised in that said screen is adapted for placement at a location between the wound and said cover to prevent overgrowth of the wound and is secured in said location at the periphery of said cover.

14. An appliance according to claim 2, characterised in that said screen comprises a sheet-like mesh.

15. An appliance according to claim 12, characterised in that said seal includes an adhesive material on the cover for adhering to tissue surrounding the wound and a seal member at least partially overlying said cover.

~~16. An appliance according to any of the preceding claims, characterised in that said reduced pressure supply means comprises a vacuum system for producing a reduced pressure]~~

¹⁶
~~17.~~ ¹ An appliance according to claim ~~16~~, characterised in that said vacuum system includes a collection device for collecting fluid aspirated from the wound.

¹⁷
~~18.~~ ¹⁶ An appliance according to claim ~~17~~, characterised in that said collection device includes means for halting said application of reduced pressure to the wound when said fluid exceeds a predetermined quantity.

¹⁸
~~19.~~ ^{15 17} An appliance according to any of claims ~~18~~ to ~~18~~, characterised in that said reduced pressure is from about 6.77 kPa (2 inch Hg) below atmospheric pressure to about 23.70 kPa (7 inch Hg) below atmospheric pressure.

~~20. An appliance according to any of claims 16 to 19, characterised in that said reduced pressure supply means comprises a length of tubing connected between said vacuum system and said cover and in that said vacuum system comprises:~~

(a) a vacuum pump connected with said tubing; and

(b) a filter for preventing said pump from venting micro-organisms aspirated from the wound

¹⁹
~~21.~~ ¹ An appliance according to claim ~~20~~, characterised in that said filter is connected along said tubing between said pump and said cover for preventing contamination of said pump.

²⁰
~~22.~~ ¹⁶ An appliance according to any of claims ~~19~~ to ~~21~~, characterised in that said vacuum system comprises control means for cyclically controlling said production of reduced pressure in alternating periods of production and non-production of reduced pressure.

²¹
~~23.~~ ¹ An appliance according to claim ~~18~~, characterised in that said reduced pressure supply means comprises a length of tubing and said vacuum system comprises an aspirating container connected along said length of tubing between said vacuum system and cover and a flotation valve within said aspirating container for blocking said tubing when a predetermined amount of fluid is collected within said container.

²²
~~24.~~ ¹ An appliance according to claim ~~18~~, characterised in that said vacuum system comprises an expandable chamber and sensing means for sensing expansion of said expandable chamber, said sensing means being operatively connected with said vacuum system so that application of a reduced pressure to the wound is halted when a predetermined expansion of said expandable chamber is sensed by said sensing means.

²³
~~25.~~ ¹⁷ An appliance according to claim ~~18~~, characterised in that said reduced pressure supply means comprises a length of tubing and said halting means comprises a filter along said tubing, said filter having pores that block the supply of reduced pressure via said tubing when said pores are filled with said fluid.

²⁴
~~26.~~ ¹ An appliance according to claim 1, characterised in that said reduced pressure supply means comprises an open cell foam screen for applying the reduced pressure to the wound, and a tube member embedded in said screen for extending from beneath the cover and for supplying the reduced pressure to said foam.

²⁵
~~27.~~ ²¹ An appliance according to claim ~~26~~, characterised in that said tube member has a side port within the foam for promoting substantially uniform application of reduced pressure to the wound.

²⁶
~~28.~~ ^{24 25} An appliance according to claim ~~28~~ or 27, characterised in that said foam screen is adapted to be conformed to the shape and size of the wound.

²⁷
~~29.~~ ¹ An appliance according to claim 1, characterised in that:

(a) said cover comprises a deformable cover for placement over the wound;

(b) said seal comprises an adhesive layer on the cover for forming a seal between said cover and tissue surrounding the wound;

(c) said support means supports said cover outward from the wound forming an enclosed volume bounded by said cover and the wound and tissue surrounding the wound; and

(d) said reduced pressure supply means supplies reduced pressure to said enclosed volume and deforms said cover so as to maintain the reduced pressure on the wound and to exert tension upon the tissue surrounding the wound.

- 5 ²⁸ 30. An appliance according to claim ²⁷ 29, characterised in that said support means comprises a support member positioned within said enclosed volume.
- 10 ²⁹ 31. An appliance according to claim ²⁸ 30, characterised in that said support member comprises a porous cup member.
- ³⁰ 32. An appliance according to claim ²⁸ 30, characterised in that said support means comprises a support member positioned external to said enclosed volume.
- 15 ³¹ 33. An appliance according to claim ³⁰ 32, characterised in that said support means comprises attachment means for attaching said cover to said support means, and said support means comprises a plurality of leg members for supporting said cover out of contact with the wound.
- ³² 34. An appliance according to any of claims ~~1~~ ³³ 1 and ~~14~~ ³³ 14, characterised in that only a single port is associated with said cover for connecting said reduced pressure supply means to said cover.
- 20 ³³ 35. An appliance according to claim 8, characterised in that the support means includes a convex shield and the flexible sheet overlies and extends beyond the shield at the periphery of the sheet.
- 25 ³⁴ 36. An appliance according to claim ³³ 35, characterised in that the seal cooperates with a portion of the flexible sheet that extends beyond the shield to seal the cover.
- ³⁵ 37. An appliance according to claim ³³ 36, characterised in that it further comprises a pad positioned between edges of the shield and the tissue surrounding the wound.

Patentansprüche

1. Vorrichtung (29c) zum Vornehmen einer Unterdruckbehandlung an einer Wunde, umfassend:
- 35 (a) eine undurchlässige Abdeckung (117) zum Abdecken und Verschließen der Wunde (114) und zum Aufrechterhalten von Unterdruck an der Wundstelle;
- (b) eine Abdichtung (119) in Wirkverbindung mit der Abdeckung (117) zum Abdichten besagter Abdeckung gegenüber dem die Wunde umgebenden Gewebe;
- (c) ein starres Trägermittel (118); und
- 40 (d) ein Mittel (112) zum Zuführen von Unterdruck in Wirkverbindung mit der Abdeckung zum Anschluss an eine Saugquelle zum Zuführen und Aufrechterhalten des Unterdrucks unter der Abdeckung, dadurch gekennzeichnet, dass die Abdeckung (117) flächenförmig ist und das starre Trägermittel (118) der Abdeckung (117) zugeordnet und davon getrennt ist, um eine Berührung der Wunde durch die Abdeckung zu vermeiden.
- 45 2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass sie ferner eine Abschirmung (100) zum Verhindern einer Überwucherung von Wundgewebe umfasst, wobei diese Abschirmung (100) zwischen der Wunde (114) und der Abdeckung (117) angeordnet ist.
3. Vorrichtung nach Anspruch 2, dadurch gekennzeichnet, dass die Abschirmung (100) eine poröse Folie aufweist.
- 50 4. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass der Unterdruck im Bereich von ca. 6,77 kPa (2 Zoll Hg) unter Atmosphärendruck bis ca. 23,70 kPa (7 Zoll Hg) unter Atmosphärendruck liegt.
- 55 5. Vorrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, dass die Abdichtung (119) ein Klebmaterial auf der Abdeckung zum Befestigen der Abdeckung auf dem die Wunde umgebenden Gewebe enthält.
6. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass die Abdeckung eine flexible Folie (128) enthält.

Claim 1

1. An appliance (29c) for administering a reduced pressure treatment to a wound comprising:

- (a) an impermeable cover (117) for covering and enclosing the wound (114) and for maintaining reduced pressure at the site of the wound;
- (b) a seal (119) operably connected with the cover (117) for sealing said cover to tissue surrounding the wound;
- (c) rigid support means (118) associated with and separate from said cover for holding the cover out of contact with the wound;
- (d) reduced pressure supply means (112) operably connected with the cover for connection to a source of suction for supplying and maintaining said reduced pressure beneath the cover, said reduced pressure supply means comprising a vacuum system for producing a reduced pressure, wherein said reduced pressure supply means comprises a length of tubing connected between said vacuum system and said cover, said vacuum system comprising a vacuum pump connected with said tubing;

characterised in that

said cover (117) is a flexible sheet (128)

and in that

said vacuum system further comprises a filter for preventing said pump from venting micro-organisms aspirated from the wound.

~~11 November~~ 2002
12 December

First Auxiliary Request
Second

Bd

Claims

1. An appliance (29c) for administering a reduced pressure treatment to a wound comprising:
 - (a) an impermeable cover (117) for covering and enclosing the wound (114) and for maintaining reduced pressure at the site of the wound;
 - (b) a seal (119) operably connected with the cover (117) for sealing said cover to tissue surrounding the wound;
 - (c) rigid support means (118); and
 - (d) reduced pressure supply means (112) operably connected with the cover for connection to a source of suction for supplying and maintaining said reduced pressure beneath the cover, characterised in that said cover (117) is sheet-like and in that said rigid support means (118) is associated with and separate from said cover (117) for holding the cover out of contact with the wound, ~~and~~ ^{and [] and < >.}
~~< > is a flexible sheet (128) >~~
2. An appliance according to claim 1, characterised in that it further comprises a screen (100) for preventing overgrowth of wound tissue, said screen (100) being positioned between said wound (114) and said cover (117).
3. An appliance according to claim 2, characterised in that said screen (100) comprises a porous sheet.
4. An appliance according to claim 1, characterised in that said reduced pressure is from about 6.77 kPa (2 inch Hg) below atmospheric pressure to about 23.70 kPa (7 inch Hg) below atmospheric pressure.
5. An appliance according to any of claims 1 to 4, characterised in that said seal (119) includes an adhesive material on the cover for securing said cover to the tissue surrounding the wound.
- ~~6. An appliance according to claim 1, characterised in that said cover comprises a flexible sheet (128).~~
- ¹~~7.~~ An appliance according to claim ¹~~6~~, characterised in that the support means (138) connects with said sheet (128) for supporting said sheet outward from the wound.
- ⁶~~8.~~ An appliance according to claim ⁶~~7~~, characterised in that said support means comprises a support member (138) located between said sheet and the wound.
- ⁷~~9.~~ An appliance according to claim ⁷~~8~~, characterised in that said support member includes a porous cup member (138) having a connection port (134) for connecting with said reduced pressure supply means (132).
- ⁹~~10.~~ An appliance according to claim ⁹~~9~~, characterised in that it further comprises a pad (120) between the wound (124) and said support member (138) for alleviating discomfort caused in the wound by said support member.
- ⁶~~11.~~ An appliance according to claim ⁶~~10~~, characterised in that said support means comprises a support member (151) extending outwardly over the wound (144) and external to said sheet (148).
- ¹⁰~~12.~~ An appliance according to claim ¹⁰~~11~~, characterised in that said support means comprises attachment means for attaching said sheet to said support means, said attachment means having a connecting member (153) for connecting with said reduced pressure supply means for providing said reduced pressure beneath said sheet, and said support member (151) comprising a plurality of leg members (158) attached to said attachment means for holding said attachment means and said sheet outward from the wound.
- ¹²~~13.~~ An appliance according to claim 2, characterised in that said screen is adapted for placement at a location between the wound and said cover to prevent overgrowth of the wound and is secured in said location at the periphery of said cover.
- ¹³~~14.~~ An appliance according to claim 2, characterised in that said screen comprises a sheet-like mesh.

R11

- 14
18. An appliance according to claim 12, characterised in that said seal includes an adhesive material on the cover for adhering to tissue surrounding the wound and a seal member at least partially overlying said cover.
- 15
~~18. An appliance according to any of the preceding claims, characterised in that said reduced pressure supply means comprises a vacuum system for producing a reduced pressure]~~
- 15
17. An appliance according to claim 16, characterised in that said vacuum system includes a collection device for collecting fluid aspirated from the wound.
- 16
18. An appliance according to claim 17, characterised in that said collection device includes means for halting said application of reduced pressure to the wound when said fluid exceeds a predetermined quantity.
- 15
18. An appliance according to any of claims 15 to 17, characterised in that said reduced pressure is from about 6.77 kPa (2 inch Hg) below atmospheric pressure to about 23.70 kPa (7 inch Hg) below atmospheric pressure.
- 15
~~18. An appliance according to any of claims 15 to 17, characterised in that said reduced pressure supply means comprises a length of tubing connected between said vacuum system and said cover and in that said vacuum system comprises:~~
- 20
(a) a vacuum pump connected with said tubing; and
(b) a filter for preventing said pump from venting micro-organisms aspirated from the wound
- 20
21. An appliance according to claim 20, characterised in that said filter is connected along said tubing between said pump and said cover for preventing contamination of said pump.
- 15
22. An appliance according to any of claims 15 to 21, characterised in that said vacuum system comprises control means for cyclically controlling said production of reduced pressure in alternating periods of production and non-production of reduced pressure.
- 20
23. An appliance according to claim 15, characterised in that said reduced pressure supply means comprises a length of tubing and said vacuum system comprises an aspirating container connected along said length of tubing between said vacuum system and cover and a flotation valve within said aspirating container for blocking said tubing when a predetermined amount of fluid is collected within said container.
- 15
24. An appliance according to claim 15, characterised in that said vacuum system comprises an expandable chamber and sensing means for sensing expansion of said expandable chamber, said sensing means being operatively connected with said vacuum system so that application of a reduced pressure to the wound is halted when a predetermined expansion of said expandable chamber is sensed by said sensing means.
- 20
25. An appliance according to claim 15, characterised in that said reduced pressure supply means comprises a length of tubing and said halting means comprises a filter along said tubing, said filter having pores that block the supply of reduced pressure via said tubing when said pores are filled with said fluid.
- 25
26. An appliance according to claim 1, characterised in that said reduced pressure supply means comprises an open cell foam screen for applying the reduced pressure to the wound, and a tube member embedded in said screen for extending from beneath the cover and for supplying the reduced pressure to said foam.
- 26
27. An appliance according to claim 26, characterised in that said tube member has a side port within the foam for promoting substantially uniform application of reduced pressure to the wound.
- 25
28. An appliance according to claim 26 or 27, characterised in that said foam screen is adapted to be conformed to the shape and size of the wound.
- 26
29. An appliance according to claim 1, characterised in that:
- (a) said cover comprises a deformable cover for placement over the wound;
(b) said seal comprises an adhesive layer on the cover for forming a seal between said cover and tissue surrounding the wound;

(c) said support means supports said cover outward from the wound forming an enclosed volume bounded by said cover and the wound and tissue surrounding the wound; and

(d) said reduced pressure supply means supplies reduced pressure to said enclosed volume and deforms said cover so as to maintain the reduced pressure on the wound and to exert tension upon the tissue surrounding the wound.

- 29 27.
20. An appliance according to claim ^{28 26} 29, characterised in that said support means comprises a support member positioned within said enclosed volume.
- 10 30 28.
31. An appliance according to claim ^{29 27} 30, characterised in that said support member comprises a porous cup member.
- 31 29.
32. An appliance according to claim ^{29 27} 30, characterised in that said support means comprises a support member positioned external to said enclosed volume.
- 15 32 30.
33. An appliance according to claim ^{31 29} 32, characterised in that said support means comprises attachment means for attaching said cover to said support means, and said support means comprises a plurality of leg members for supporting said cover out of contact with the wound.
- 20 33 31.
34. An appliance according to any of claim ^{32 30} 1 and ^{33 31} 34, characterised in that only a single port is associated with said cover for connecting said reduced pressure supply means to said cover.
- 34 32.
35. An appliance according to claim ^{34 32} 34, characterised in that the support means includes a convex shield and the flexible sheet overlies and extends beyond the shield at the periphery of the sheet.
- 25 35 33.
36. An appliance according to claim ^{34 32} 35, characterised in that the seal cooperates with a portion of the flexible sheet that extends beyond the shield to seal the cover.
- 36 34.
37. An appliance according to claim ^{34 32} 36, characterised in that it further comprises a pad positioned between edges of the shield and the tissue surrounding the wound.

Fluid introduction according to DS (US-A-2,280,915)

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